May 14, 2000

**MEMORANDUM**

TO: Stephen West, Administrator
Boise Regional Office

FROM: Daniel Heiser, P.E.
State Technical Services Office

THROUGH: Daniel Salgado
Lead Process Engineering
State Technical Services Office

SUBJECT: T2-990163, Boise Moulding and Lumber Company, Inc., Boise
Technical Analysis for Tier II Operating Permit No. 001-00130, Architectural Woodwork Manufacturing

## PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 16.01.01 Sections 404.04 (Rules for the Control of Air Pollution in Idaho) (Rules) for Tier II Operating Permits.

## PROJECT DESCRIPTION

This project is for the issuance of a Tier II Operating Permit (OP) for Boise Moulding and Lumber Company, Inc. located at Boise.

Boise Moulding and Lumber Company is a custom woodwork manufacturer. They produce wood moulding, flooring, siding, paneling, and decking. They are seeking a permit for a dust collection system to control mill mix wood shavings.

It should be noted that Boise Moulding and Lumber has been in existence since 1979, without obtaining a permit to construct. The company produces much more sawdust compared to 1979. In 1999, DEQ inspected the facility and recommended that Boise Moulding and Lumber apply for a permit.

## FACILITY DESCRIPTION

1. Process Description

Lumber is sorted in the yard and is brought into the shop and is then processed. The flow typically goes to the mill side first, where it is turned into custom products, needing no more processing; or the material is prepared for the benchmark shop where machinery and assembly are carried out. The flow of raw materials to finished products constantly changes due to the custom work.

The milling machinery, which will be connected to the main dust system, will be equipped with dust hoods on all chip producing stations and on each machine. The flow of air to these stations will be controlled by blast gates which can be closed when a machine is not in use, thus making air capacity available for other machines.

Boise Moulding and Lumber uses three cyclones (#1, #2, and #3) and a truck load out bin. Wood dust will be collected from their processing bin and carried through ductwork to the truck load out.

Cyclone #1 receives saw dust and shavings form a 4" x 6" moulder, 1 single surfacer, 1 ripsaw and a straight line edger. Air for this cyclone is handled by a 40 hp blower. These machines are not run

at the same time. Air capacity is regulated by the blast gates.

Cyclone #2 receives shavings from a 4" x 12" moulder, a 4" x 6" moulder, and a 6" x 15" planer. The air for cyclone #2 is handled by a 60 hp blower. Blast gates are opened to the machines when they are being run.

Cyclone #3 receives sanding dust from a 6" x 52" sander. The air for cyclone #3 is handled by a 60 hp blower.

These cyclones have a design with a cone length that is two or more times their diameter. Cyclone #1 is 7 feet in diameter, cyclone #2 is 8 feet nine inches in diameter, and cyclone # 3 is eight feet in diameter.

The greatest likelihood of fugitive emissions comes from a potential sawdust spill. This may occur at the load out bin if the truck is overfilled or if there is mishandling. Any spillage can be contained. Water is sprayed on the ground or on the sides of the truck and on the frame of the bin to wash down any loose particles of mill mix wood dust. After the truck has been covered with tarp and pulled out, the ground is raked and swept and the small amount of dust is placed in a dumpster.

2. Equipment Listing

Milling Equipment

3 moulding machines
1 four sided planer
1 straight line edger
1 sander
1 single surfacer
1 resaw

Benchwork Machines

1 panel saw
1 single surfacer
3 cutoff saws
2 bandsaws
3 shapers
3 table saws
3 small sanders
Other equipment

Cyclones

| Cyclone #1 | |
|---|---|
| Size (diameter, ft) | 7 ft |
| Exit diameter (ft) | 2.5 ft |
| Height (ft) | 45 ft |
| Exhaust flow (acfm) | 9,000 acfm |

Cyclone #2

| | |
|---|---|
| Size (diameter, ft) | 8.75 ft |
| Exit diameter (ft) | 3 ft |
| Height (ft) | 25 ft |
| Exhaust flow (acfm) | 10,000 acfm |

Cyclone #3

| | |
|---|---|
| Size (diameter, ft) | 8 ft |
| Exit diameter (ft) | 3 ft |
| Height (ft) | 25 ft |
| Exhaust flow (acfm) | 10,000 acfm |

## SUMMARY OF EVENTS

On January 21, 2000, the Idaho Department of Health and Welfare, Division of Environmental Quality (DEQ) received a permit application from Boise Moulding and Lumber Company, Inc., for an architectural woodworking manufacturing plant. On March 15, 2000 the application was determined complete.

## DISCUSSION

1. Emission Estimates

Emissions were first estimated by the applicant using AP-42 emission factors and by using DEQ approved wood industry emission factors which were published in a memorandum dated June 30, 1997 written by Val Bohdan. A PM-10 emission factor of 0.015 grains/dscf was used (medium efficiency for mill mix). However, as discussed in the next section on modeling, an emission standard of 0.0017 gr/dscf must be required so that PM-10 ambient impacts are less than significant.

An emission calculations spreadsheet is presented in Appendix A of this memorandum.

2. Modeling

Modeling output by DEQ is discussed in Appendix B. SCREEN3 and ISCST3 modeling were conducted for PM-10 on all point sources of emission. Because SCREEN3 modeling did not show ambient impacts below the significant increase levels, ISCST3 was performed. Under ISCST3, the ambient 24-hour impact is estimated at 44 $\mu g/m^3$ based on an eight-hour day of operation and a DEQ emission factor of 0.015 grains/dscf. The annual impact, based on the emission factor of 0.015 grains/dscf and an eight-hour day of operation was 9.5 $\mu g/m^3$. However, to not exceed the significant increase of 5 $\mu g/m^3$ for the PM-10 24-hour standard and the annual significant increase level of 1 $\mu g/m^3$, an emission factor of 0.0017 grains/dscf would be necessary

The permit will include PM-10 standards based on 0.0017 grains/dscf which, when modeled, will not result in a significant increase of ambient concentrations for PM-10. The source will be required to source test to prove it can meet the pound per hour emission limits set in the permit.

3. Area Classification

Boise Moulding and Lumber Company, Inc., Ada county, Idaho, is located in AQCR 64. The area is classified as nonattainment for $PM_{10}$ and CO and attainment or unclassifiable for all other federal and state criteria air pollutants (i.e., $NO_x$, VOCs, and $SO_x$).

4. Facility Classification

This facility is not a major facility as defined in IDAPA 16.01.01.006.55 and IDAPA 16.01.01.008.10. The AIRS facility classification for this facility is "B" because the uncontrolled potential to emit is less than 100 T/yr.

5. Regulatory Review

This OP is subject to the following permitting requirements:

| | | |
|---|---|---|
| a. | IDAPA 16.01.01.401 | Tier II Operating Permit |
| b. | IDAPA 16.01.01.403 | Permit Requirements for Tier II Sources |
| c. | IDAPA 16.01.01.404.01© | Opportunity for Public Comment |
| d. | IDAPA 16.01.01.404.04 | Authority to Revise or Renew Operating Permits |
| e. | IDAPA 16.01.01.406 | Obligation to Comply |
| f. | IDAPA 16.01.01.470 | Permit Application Fees for Tier II Permits |
| g. | IDAPA 16.01.01.577 | Ambient Air Quality Standards for Specific Air Pollutants |
| h. | IDAPA 16.01.01.625 | Visible Emission Limitation |
| i. | IDAPA 16.01.01.650 | General Rules for the Control of Fugitive Dust |
| j. | IDAPA 16.01.01.700 | Particulate Matter, Process Weight Regulations |
| k. | 40 CFR 60 | New Source Performance Standards. |

6. Permit Requirements

6.1 Emission Limits

Emission limits for PM-10 were established to give an overall conservatively estimated ambient concentration of 5 micrograms per cubic meter ($\mu g/m^3$) twenty four average concentration, and a 1 $\mu g/m^3$ annual average. A spreadsheet displaying the calculated emissions is shown in Appendix A.

6.2 Operating Requirements

Limitations of the total daily and annual hours of production were set to assure significant increases of PM-10 ambient concentrations would not occur.

7. AIRS Information

Information necessary to the AIRS database is included as Attachment C of this Technical Memorandum.

FEES

Fees (pursuant to IDAPA 16.01.01.470) do not apply to this facility because, although it is being issued a Tier II operating permit, it is a minor source but not a synthetic minor source.

RECOMMENDATION

Based on the review of the application materials, and all applicable state and federal regulations, staff recommend that DEQ issue a Tier II OP to Boise Moulding and Lumber Company, Inc. No public comment period is recommended because the facility exists as a minor source that is not a synthetic minor source.

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cc: State Technical Services
EPA Region 10
Boise RO

# Appendix A

## *Emission Estimate Calculations*

## *T2-990163*

## *Boise Moulding and Lumber Company, Boise*

**PM-10 Emission Estimates for Boise Moulding and Lumber Company**

| Source | DEQ Emission Factor, gr/dscf | Exit Flow Rate, scfm | Emission Rate Based on DEQ Emission Factor, lb/hr | Emission Factor Needed to Meet Ambient Impact Requirements, gr/dscf | Permitted Emission Rate to Meet 24-hour 5 ug/m3 Increase, lb/hr | Permitted Emission Rate to Meet Annual 1 ug/m3 Increase, ton/yr |
|---|---|---|---|---|---|---|
| Cyclone 1 | 0.015 | 9,000 | 1.16 | 0.0017 | 0.13 | 0.14 |
| Cyclone 2 | 0.015 | 10,000 | 1.29 | 0.0017 | 0.15 | 0.15 |
| Cyclone 3 | 0.015 | 10,000 | 1.29 | 0.0017 | 0.15 | 0.15 |

# Appendix B

## *Modeling Results*

## *T2-990163*

## *Boise Moulding and Lumber Company, Boise*

**From:** JAY WITT
**To:** DAN HEISER
**Date:** Wed, May 10, 2000 12:01 PM
**Subject:** Re: Boise Moulding Refined Modeling

I have completed the refined dispersion modeling analysis for Boise Moulding. I used the most recent version of the Industrial Source Complex (ISCST3) dispersion model. I used the same parameters for the three stacks that you used in the SCREEN3 analyses with the exception of PM10 emissions rate. I used the emissions rates given in you e-mail (below). Stack locations, property boundaries, building locations, and building heights were obtained from the scaled plot plan provided by the facility. This information was used to produce building downwash effects. Building downwash effects were included in the analyses. The ISCST3 model was ran using EPA regulatory default parameters and 5 years worth of National Weather Service (NWS) surface and upper air meteorological data for Boise.

The SCREEN3 analyses used the "rural" classification for the area surrounding the facility. However, because of the facilities location, it could be argued that the land in the 3 Km radius surrounding the facility is more urban than rural. Therefore, two sets of analyses were conducted, one using the "urban" land use scenario and one using the "rural" scenario. The urban ambient impacts were slightly more conservative than the rural impacts.

The maximum annual predicted ambient impact from the facility is 28.4 ug/m3. The maximum predicted highest second high ambient 24-hour impact is 131.5 ug/m3. Neither of these impacts meet the PM10 significant impact limits in place for Northern Ada County of 1 ug/m3 (annual) and 5 ug/m3 (24-hour). I recommend that permit conditions be drafted (either production limits or stack testing requirements) that ensure that the PM10 significant impact limits are met. I have calculated maximum allowable emissions rates based on the predicted modeled ambient impacts. They are 0.039 lb/hr for cyclone #1, 0.043 lb/hr for cyclone #2, and 0.041 lb/hr for cyclone #3. These are the emissions rates needed to meet the 1 ug/m3 annual significance limit and the 5 ug/m3 24-hr significance limit, [assuming 24 hour per day operation].

If you have any questions or need any more information, let me know.

>>> DAN HEISER 05/04 5:15 PM >>>
Jay,

These screen outputs are based on a 1 lb/hr emissions rate; actual emission rates are 1.16 lb/hr for Cyclone Number 1, 1.29 lb/hr for Cyclone Number 2, and 1.29 lb/hr for cyclone number 3. If you have questions, let me know.

Dan

CC: DANIEL SALGADO

# Appendix C

## *AIRS Information*

## *T2-990163*

## *Boise Moulding and Lumber Company, Boise*

## ABBREVIATED AIRS DATA ENTRY SHEET

Name of Facility: Boise Moulding and Lumber Company, Inc.

AIRS/Permit #: 001-00130

Permit Issue Date: May, 2000

| *Source/Emissions Unit Name (25 spcs) (Please use name as indicated in permit) | SCC # (8 digit #) | Air Program (SIP/NESHAP/ NSPS/PSD) |
|---|---|---|
| Cyclone #1 | 30700808 | SIP |
| Cyclone #2 | 30700808 | SIP |
| Cyclone #3 | 30700808 | SIP |

RETURN TO PAT RAYNE
AIRS-PT.LST (9/95)